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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,827	11/28/2001	Kouji Yoshida	216631US2	8439
22850	7590	12/19/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			LUU, CUONG V	
			ART UNIT	PAPER NUMBER
			2128	
DATE MAILED: 12/19/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.	Applicant(s)	
09/994,827	YOSHIDA, KOUJI	
Examiner	Art Unit	
Cuong V. Luu	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-19, 21-23 and 25-40 is/are rejected.
- 7) ☒ Claim(s) 7, 20 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)     | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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### **DETAILED ACTION**

Claims 1-40 have been examined. Claims 7, 20, and 24 have been objected to. Claims 1-6, 8-19, 21-23, and 25-40 have been rejected.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. The claims are generally narrative and indefinite, failing to conform to current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. In several claims the word "unimodal" is used as a noun while it is an adjective. In addition, from its usage the examiner does not understand what the applicant means by it. For the purpose of examination, the examiner interprets it as a single optimal solution.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

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directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-6, 8-19, 21-23, 25-40 are rejected under 35 U.S.C. 102(e) as being unpatentable by Oh (U.S Patent 6768930 B2).

1. As per claim 1, Oh teaches a design method with which to design a control system that controls an object to be controlled, the design method comprising:
  - providing a control system model having a continuously variable parameter for the control system (col. 10, lines 33-45);
  - providing at least one evaluation function that evaluates capability of the control system and where a unimodal is not guaranteed when the continuously variable parameter varies (col. 10, lines 59-67; col. 17, lines 3-8); and
  - obtaining a value of the continuously variable parameter at which the evaluation function takes on an optimal value (col. 6, lines 26-30).
2. As per claim 2, Oh teaches obtaining an optimal solution of the continuously variable parameter by using a genetic algorithm (col. 17, lines 35-43).
3. As per claim 3, Oh teaches the object to be controlled is a stage on which a body is mounted, and the control system is a stage control system that drives and controls the stage (col. 5, lines 14-22).

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4. As per claim 4, Oh teaches a design method with which to design a control system that controls an object to be controlled, the design method comprising:
  - providing a control system model having a continuously variable parameter for the control system (col. 10, lines 33-45);
  - providing a plurality of evaluation functions that evaluate capability of the control system and that vary independently of each other when the continuously variable parameter varies (col. 10, lines 59-67); and
  - obtaining a value of the continuously variable parameter at which the plurality of evaluation functions take on respective optimal values simultaneously (col. 6, lines 26-30).
5. As per claim 5, Oh teaches at least one of the plurality of evaluation functions a unimodal is not guaranteed when the continuously variable parameter varies. (col. 10, lines 59-67; col. 17, lines 3-8. The examiner interprets the exhaustive technique is used because an optimal solution is not guaranteed a global optimal solution).
6. As per claim 6, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.
7. As per claim 8, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.
8. As per claim 9, Oh teaches a control system designed by using the design method according to claim 1 (col. 12, lines 14-22).

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9. As per claim 10, Oh teaches a control system designed by using the design method according to claim 4 (col. 12, lines 14-22).

10. As per claim 11, Oh teaches an adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

providing at least one evaluation function that evaluates capability of the control system and where a unimodal is not guaranteed when the continuously variable parameter varies (col. 10, lines 59-67; col. 17, lines 3-8);

obtaining a value of the continuously variable parameter at which the evaluation function takes on an optimal value (col. 6, lines 26-30); and

setting the continuously variable parameter to the value obtained (col. 16, lines 26-30).

11. As per claim 12, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

12. As per claim 13, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.

13. As per claim 14, Oh teaches an adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

obtaining an optimal value on design of the continuously variable parameter, using the design method according to claim 1 (col. 6, lines 26-30);

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obtaining a value of the continuously variable parameter, within a given range including the optimal value on design of the continuously variable parameter, at which the evaluation function takes on an optimal value in controlling an object to be controlled via the control system (col. 6, lines 26-30, col. 17, lines 20-22); and

setting the continuously variable parameter to the value obtained in the obtaining of a value of the continuously variable parameter (col. 16, lines 26-30).

14. As per claim 15, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

15. As per claim 16, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.

16. As per claim 17, Oh teaches an adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

providing a plurality of evaluation functions that evaluate capability of the control system and that vary independently of each other when the continuously variable parameter varies (col. 10, lines 59-67);

obtaining a value of the continuously variable parameter at which the plurality of evaluation functions take on respective optimal values simultaneously (col. 6, lines 26-30); and

setting the continuously variable parameter to the value obtained (col. 16, lines 26-30).

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17. As per claim 18, these limitations have already been discussed in claim 1. They are, therefore, rejected for the same reasons.

18. As per claim 19, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

19. As per claim 21, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.

20. As per claim 22, Oh teaches an adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

obtaining an optimal value on design of the continuously variable parameter, using the design method according to claim 4 (col. 6, lines 26-30);

obtaining a value of the continuously variable parameter, within a given range including the optimal value on design of the continuously variable parameter, at which the plurality of evaluation functions simultaneously take on respective optimal values in controlling an object to be controlled via the control system (col. 17, lines 18-24); and

setting the continuously variable parameter to the value obtained in the obtaining of a value of the continuously variable parameter (col. 16, lines 26-30).

21. As per claim 23, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.



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22. As per claim 25, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.

23. As per claim 26, Oh teaches an exposure method comprising:

providing the control system according to claim 9 serving as a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted (col. 12, lines 14-19); and  
radiating an exposure beam while controlling the stage via the stage control system (col. 12, lines 19-34).

24. As per claim 27, Oh teaches the body is a substrate that is exposed to the exposure beam (col. 12, lines 26-34).

25. As per claim 28, Oh teaches an exposure method comprising:

providing the control system according to claim 10 serving as a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted (col. 12, lines 14-19); and  
radiating an exposure beam while controlling the stage via the stage control system (col. 12, lines 19-34).

26. As per claim 29, this limitation has already been discussed in claim 27. It is, therefore, rejected for the same reasons.

27. As per claim 30, these limitations have already been discussed in claims 13 and 26. They are, therefore, rejected for the same reasons.

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28. As per claim 31, this limitation has already been discussed in claim 27. It is, therefore, rejected for the same reasons.

29. As per claim 32, these limitations have already been discussed in claims 16 and 26. They are, therefore, rejected for the same reasons.

30. As per claim 33, this limitation has already been discussed in claim 27. It is, therefore, rejected for the same reasons.

31. As per claim 34, these limitations have already been discussed in claims 21 and 26. They are, therefore, rejected for the same reasons.

32. As per claim 35, this limitation has already been discussed in claim 27. It is, therefore, rejected for the same reasons.

33. As per claim 36, these limitations have already been discussed in claims 25 and 26. They are, therefore, rejected for the same reasons.

34. As per claim 37, this limitation has already been discussed in claim 27. It is, therefore, rejected for the same reasons.

35. As per claim 38, Oh teaches an exposure apparatus that transfers a predetermined pattern onto a substrate by illuminating the substrate with an exposure beam, the exposure apparatus comprising:

a beam source that generates the exposure beam (col. 12, lines 19-24); and

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the control system according to claim 9 that drives and controls a stage on which the substrate is mounted (col. 12, lines 14-19).

36. As per claim 39, Oh teaches an exposure apparatus that transfers a predetermined pattern onto a substrate by illuminating the substrate with an exposure beam, the exposure apparatus comprising:

a beam source that generates the exposure beam (col. 12, lines 19-24); and  
the control system according to claim 10 that drives and controls a stage on which the substrate is mounted (col. 12, lines 14-19).

37. As per claim 40, Oh teaches an exposure apparatus that transfers a predetermined pattern onto a substrate by illuminating the substrate with an exposure beam, the exposure apparatus comprising:

a beam source that generates the exposure beam (col. 12, lines 19-24); and  
a stage control system that can be adjusted using the adjustment method according to claim 21, and drives and controls a stage on which the substrate is mounted (col. 12, lines 14-19).

### ***Allowable Subject Matter***

Claims 7, 20, 24 are objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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38. As per claim 7, it is objected to as being dependent upon rejected base claim 6 and

4. If rewritten in independent form including all of the limitations of the base claim 4 and intervening claim 6, it would be allowable because it has following features:

in obtaining values of the plurality of continuously variable parameters, a plurality of Pareto optimal solutions of a group of the plurality of continuously variable parameters are obtained simultaneously.

39. As per claim 20, it is objected to as being dependent upon rejected base claim 6 and

4. If rewritten in independent form including all of the limitations of the base claim 17 and intervening claim 19, it would be allowable because it has following features:

in obtaining values of the plurality of continuously variable parameters, a plurality of Pareto optimal solutions of a group of the plurality of continuously variable parameters are obtained simultaneously.

40. As per claim 24, it is objected to as being dependent upon rejected base claim 6 and

4. If rewritten in independent form including all of the limitations of the base claim 22 and intervening claim 23, it would be allowable because it has following features:

in obtaining values of the plurality of continuously variable parameters, a plurality of Pareto optimal solutions of a group of the plurality of continuously variable parameters are obtained simultaneously.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cuong V. Luu whose telephone number is 571-272-8572. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah, can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. An inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CVL

Thay Phan  
Thai Phan  
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